Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application. For convenience, clean versions of amended independent claims 11 and 41 are attached as Appendix A on page 11 of this application.

Listing of Claims:

Claims 1-10 (cancelled).

Claim 11 (currently amended): A method ~~of holographic reconstruction~~ for reconstructing a three-dimensional scene using a reconstruction display device including a light source and an optical system ~~to illuminate~~ and a hologram encoded on a ~~regularly structured spatial light modulator~~ hologram-bearing medium having a matrix of cells; the hologram-bearing medium and optical system ~~spatial light modulator~~ being illuminated by the light source ~~so that it generates a wavefront~~; the method comprising the steps of:

(a) ~~controlling the spatial light modulator specifically so that the wavefront is associated with a virtual observer window at which an observer places at least one eye in order to view the entire holographic reconstruction, the step of controlling spatial light modulator resulting in the virtual observer window being constrained to be substantially at the image plane of the light source;~~

~~(b) limiting the size of the virtual observer window to be no larger than a single diffraction order of the light diffracted from the spatial light modulator, the pitch of the spatial light modulator determining the maximum size of the virtual observer window and not the maximum size of the holographic reconstruction because the virtual observer window is substantially at the image plane of the light source~~;

(i) the optical system generating a Fourier or inverse Fourier transform of the hologram encoded on the hologram-bearing medium at the image plane of the light source;

(ii) providing a viewing window in the image plane of the light source, the viewing window being the location where an observer places at least one eye to view the holographic reconstruction representing the three-dimensional scene, the size of the viewing window being no larger than a single diffraction order of the light diffracted by the hologram-bearing medium;

(iii) encoding the hologram on the hologram-bearing medium to reconstruct a given object point, when seen from the viewing window, in only a limited region of the

hologram-bearing medium, so that the Fourier or inverse Fourier transform in the viewing window is restricted to a single diffraction order of the light diffracted by the hologram-bearing medium; and

~~(c)~~ (iv) forming the holographic reconstruction of the three-dimensional scene ~~anywhere~~ within a reconstruction frustum ~~spanned by the spatial light modulator~~ stretching between the hologram-bearing medium and the ~~at least one~~ viewing window.

Claim 12. (currently amended) The method of Claim 11, wherein the ~~virtual observer~~ viewing window is positioned in relation to an eye of an observer.

Claim 13. (currently amended) The method of Claim 11 in which the holographic reconstruction of the three-dimensional scene is made up of multiple discrete points and the hologram on the hologram-bearing medium comprises ~~a~~ the limited region with information needed to reconstruct one such single point in the reconstruction, the point being visible from the ~~virtual observer~~ viewing window, and is characterized in that the limited region:

(a) is encoded with information for that single point in the reconstruction and

(b) is the only limited region in the hologram encoded with information for that point, and

(c) is restricted in size to form a portion of the entire hologram, the size being such that multiple reconstructions of that point caused by higher diffraction orders are not visible at the ~~virtual observer~~ viewing window.

Claim 14. (currently amended) The method of Claim 13 in which the limited region has been generated by a projection from the ~~virtual observer~~ viewing window through the single point onto the hologram-bearing medium.

Claim 15. (Previously presented) The method of Claim 11 comprising the step of time sequentially re-encoding a hologram on the hologram-bearing medium for one eye and then the other eye of an observer.

Claim 16. (currently amended) The method of Claim 11 in which the holographic reconstruction representing the three-dimensional scene is described by the Fresnel transform of the hologram and not the Fourier transform of the hologram.

Claim 17. (canceled)

Claim 18. (currently amended) The method of Claim 11 in which the size of the ~~virtual observer~~ viewing window is calculated as a function of the periodicity interval of the hologram.

Claim 19. (currently amended) The method of Claim 11 in which ~~virtual observer~~ the viewing window is smaller than the hologram-bearing medium.

Claim 20. (currently amended) The method of Claim 11 in which there are separate ~~virtual observer~~ viewing windows, one for each eye of the observer.

Claim 21. (currently amended) The method of Claim 20 in which each ~~virtual observer~~ viewing window is approximately 1cm x 1cm.

Claim 22. (currently amended) The method of Claim 20 in which the locations of an observer's eyes are tracked and the positions of the ~~virtual observer~~ viewing windows are altered so that the observer can maintain a view through each [virtual observer] viewing window even when moving his or her head.

Claim 23. (Previously presented) The method of Claim 11 in which the light source includes one or more individual light sources.

Claim 24. (Previously presented) The method of Claim 11 in which the light source includes one or more virtual light sources.

Claim 25. (Previously presented) The method of Claim 11, in which the light source is a lineshaped light source.

Claim 26. (Previously presented) The method of Claim 11, in which the light source is a real light source.

Claim 27. (Previously presented) The method of Claim 11, in which the light source is a virtual light source.

Claim 28. (Previously presented) The method of Claim 11, in which the light source is a point light source.

Claim 29. (currently amended) The method of Claim 11, wherein several light sources are turned on to generate ~~virtual observer~~ viewing windows for several observers.

Claim 30. (Previously presented) The method of Claim 11, wherein the light source is positioned by mechanical or electronic displacement, or by movable mirrors.

Claim 31. (Previously presented) The method of Claim 11, wherein information required to determine the position of the light source is provided by at least one position sensor that measures the position of the observer.

Claim 32. (currently amended) The method of Claim 11 comprising the steps of assigning a first ~~virtual observer~~ viewing window to a first eye of a viewer and also assigning a second ~~virtual observer~~ viewing window to the other eye of the viewer, the second ~~virtual observer~~ viewing window being generated using a second light source.

Claim 33. (currently amended) The method of Claim 32, wherein the optical system and the hologram-bearing medium are arranged so that higher diffraction orders of the hologram for the first ~~virtual observer~~ viewing window have a zero point or an intensity minimum at the position of the second ~~virtual observer~~ viewing window.

Claim 34. (currently amended) The method according to Claim 33, wherein the hologram-bearing medium is re-encoded for the second eye at the same time as the second ~~virtual observer~~ viewing window is generated.

Claim 35. (Previously presented) The method of Claim 11, wherein the holographic reconstruction is in color, and wherein the hologram-bearing medium is composed of cells arranged in a regular pattern with at least three openings per cell, representing the three primary

colors, the phase and/or amplitude of said openings being controllable, and said openings being encoded individually for each primary color.

Claim 36. (Previously presented) The method of Claim 11, wherein a color reconstruction is achieved by at least three reconstructions in the individual primary colors, generated sequentially.

Claim 37. (Previously presented) The method of Claim 11, in which the hologram-bearing medium is a TFT display.

Claim 38. (Previously presented) The method of Claim 11 in which the hologram-bearing medium controls phase.

Claim 39. (Previously presented) The method of Claim 11 in which the hologram-bearing medium controls amplitude.

Claim 40. (Previously presented) The method of Claim 11 in which the hologram-bearing medium controls phase and amplitude.

Claim 41. (currently amended) A ~~display~~ reconstruction device for reconstructing a three-dimensional scene including a light source ~~and~~ an optical system ~~to illuminate a spatial light modulator~~, and a hologram encoded on a hologram-bearing medium having a matrix of cells ~~the device being adapted for holographic reconstruction, in which the light source illuminates the spatial light modulator so that it generates a wavefront; the device further including~~, the hologram-bearing medium and optical system being illuminated by the light source; in which:

~~(a) a computational unit sending data representing a video hologram to the spatial light modulator;~~

~~(b) the light source and the optical system illuminating the video hologram to generate a virtual observer window at which an observer places at least one eye to view the entire holographic reconstruction, the virtual observer window being constrained to be substantially at the image plane of the light source and the video hologram being such as to limit the size of the virtual observer window to be no larger than the size of a single diffraction order of the light diffracted from the spatial light modulator, the pitch of the~~

~~spatial light modulator determining the maximum size of the virtual observer window; and in which~~

(i) the optical system generates a Fourier or inverse Fourier transform of the hologram encoded on the hologram-bearing medium at the image plane of the light source;

(ii) the hologram encoded on the hologram-bearing medium to reconstruct a given object point, when seen from a viewing window, which is in the image plane of the light source and is where an observer places at least one eye to view the holographic reconstruction representing a three-dimensional scene, is encoded in only a limited region of the hologram-bearing medium, so that the Fourier or inverse Fourier transform at the viewing window is restricted to a single diffraction order of the light diffracted by the hologram-bearing medium; and

~~(c)~~ (iii) the device forms the holographic reconstruction ~~anywhere~~ within a reconstruction ~~volume spanned by the spatial light modulator and the virtual observer~~ frustrum stretching between the hologram-bearing medium and the viewing window.

Claim 42. (Previously presented) The device of Claim 41 further including a position sensor to track the location of the observer's eye or eyes.

Claim 43. (Previously presented) The device of Claim 41 in which the device includes a TFT flat screen as the hologram-bearing medium.

Claim 44. (Previously presented) The device of Claim 41 in which the device is a television.

Claim 45. (Previously presented) The device of Claim 41 in which the device is a multimedia display device.

Claim 46. (Previously presented) The device of Claim 41 in which the device is a gaming device.

Claim 47. (Previously presented) The device of Claim 41 in which the device is a medical image display device.

Claim 48. (Previously presented) The device of Claim 41 in which the device is a military information display device.

Claim 49. (canceled)

Claim 50. (currently amended) A hologram-bearing medium for encoding a hologram when forming part of a reconstructing device as claimed in Claim 41. ~~including a light source and an optical system to illuminate a hologram-bearing medium, the device being adapted to perform the method of holographic reconstruction using the method of Claim 1.~~

Claim 51. (new) The device of Claim 41, wherein the viewing window is positioned in relation to an eye of an observer.

Claim 52. (new) The device of Claim 41 in which there are separate viewing windows, one for each eye of the observer.

Claim 53. (new) The device of Claim 52 in which the locations of an observer's eyes are tracked and the positions of the viewing windows are altered so that the observer can maintain a view through each viewing window even when moving his or her head.

Claim 54. (new) The device of Claim 41 in which the light source includes one or more individual light sources.

Claim 55. (new) The device of Claim 41 in which the light source includes one or more virtual light sources.

Claim 56. (new) The device of Claim 41, in which the light source is a lineshaped light source.

Claim 57. (new) The device of Claim 41, in which the light source is a real light source.

Claim 58. (new) The device of Claim 41, in which the light source is a virtual light source.

Claim 59. (new) The device of Claim 41, in which the light source is a point light source.

Claim 60. (new) The device of Claim 41, wherein the light source is positioned by mechanical or electronic displacement, or by movable mirrors.

Claim 61. (new) The device of Claim 41, in which the hologram-bearing medium is a TFT display.

Claim 62. (new) The device of Claim 41 in which the hologram-bearing medium controls phase.

Claim 63. (new) The device of Claim 41 in which the hologram-bearing medium controls amplitude.

Claim 64. (new) The device of Claim 41 in which the hologram-bearing medium controls phase and amplitude.